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Diplopoda, Chordeumatida, Caseyidae, *Opiona columbiana* Chamberlin, 1951: Distribution extensions into the Alexander Archipelago, Alaska, USA, Queen Charlotte Islands, British Columbia, Canada, and eastern & southern Washington State, USA; additional new records from British Columbia and Washington.

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The milliped, *Opiona columbiana* Chamberlin, 1951 (Chordeumatida: Caseyidae), the northernmost representative of the genus and the northernmost in the family aside from the species of *Underwoodia* Cook & Collins, 1895, is known from the Puget Sound region of Washington State, USA, and the southwestern corner of British Columbia, Canada, on both the mainland and Vancouver Island (Chamberlin 1951; Causey 1954; Chamberlin and Hoffman 1958; Kevan 1983; Gardner and Shelley 1989; Shelley 1990, 1993, 2002; Hoffman 1999). Three localities are known – Victoria, the type locality, and Vancouver, British Columbia, and Seattle, King County (Co.), Washington, the type locality of the synonym, *O. hatchi* Causey, 1954; additionally, Shelley (1990) suggested that a female caseyid from Goldstream Provincial Park, British Columbia, west of Victoria, likely represented *O. columbiana*.

In August 2006 RMS conducted the first sampling in Alaska by a diplopodologist and encountered one male and two female caseyids on Wrangell Island, in the Alexander Archipelago of the Alaskan panhandle. The site is within the range of *U. tida* Chamberlin, 1925 (Shelley 1993), but the species is *O. columbiana*, as the gonopods agree closely with the illustrations by Gardner and Shelley (1989:213, figures 85-87). The record thus constitutes an astounding range extension of around 1,008 km (630 mi) for both the genus and species, and suggests that the female caseyid from Juneau reported by Shelley (1990) and later assigned to *U. tida* (Shelley 1993, Hoffman 1999) may also be *O. columbiana*; RMS confirmed familial occurrence in Juneau on August 18 by collecting an early instar caseyid at the entrance to Perseverance Trail.

In British Columbia in 2004, KO collected two males of *O. columbiana* on North Pender Island, Gulf Islands National Park Reserve, and a female on Graham Island, Queen Charlotte Islands (QCI), the first record of the species, genus, and family from this archipelago. Farther north, two female caseyids were taken in 1992 in the St. Elias Mountains in the extreme northwestern corner of British Columbia, which we cite in the ensuing localities and denote by the northernmost question mark (?) in Figure 1.

Finally, sampling by WPL in Washington from 2003-2005 documented *O. columbiana* some 224 km (140 mi) southward in the Cascade Mountains near the Columbia River, suggesting occurrence south of the watercourse in Oregon. The overall north-south distribution therefore extends some 1,624 km (1,015 mi) along the Pacific Coast of northwestern North America; it will increase to 1,912 km (1,195 mi) and 2,096 km (1,310 mi), respectively, if occurrences are confirmed at Juneau and in the St. Elias Mountains.

The aforementioned localities lie along a narrow, east-west axis, but we can report significant expansion in this dimension as well. A female from Tofino, Vancouver Island, extends the range ca. 160 km (100 mi) westward to the Pacific Ocean itself, and a male WPL discovered in Spokane, in eastern Washington about 32 km (20 mi) west of the border with Idaho, constitutes another amazing extension. While only ca. 448 km (280 mi), this eastward expansion is as astonishing as that to Alaska because it lies in the arid Columbia Plateau and is the first locality east

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of the temperate rainforests and moist environments of the Pacific Border and Sierra-Cascade Physiographic Provinces. The projected east-west distribution of *O. columbiana* therefore spans some 608 km (380 mi) from the Pacific Ocean to the inner/eastern periphery of the Columbia Plateau. The milliped may even inhabit the neighboring Northern Rocky Mountains, some 80 km (50 mi) east of Spokane, as two Pacific Coastal millipeds, *Kepolydesmus anderisus* (Chamberlin, 1910) and *Chonaphe armata* (Harger, 1872) (Polydesmida: Nearctodesmidae, Xystodesmidae), demonstrate such a distribution (Shelley 1994*a*, *b*).

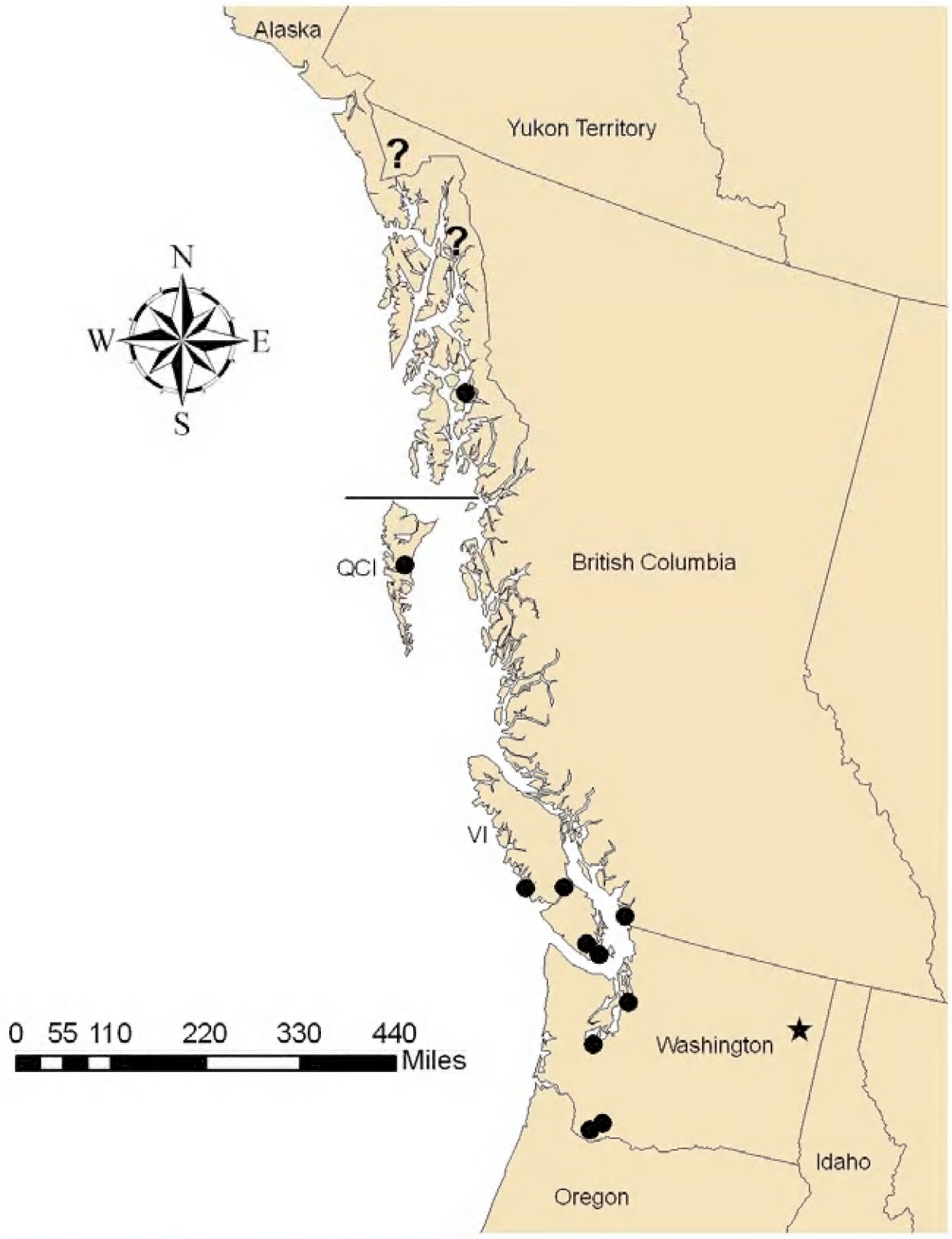

Figure 1. Distribution of *Opiona columbiana*. Dots, known records; question marks, localities awaiting confirmation; star, Spokane, Washington, locality. The southernmost dot on Vancouver Island (VI) encompasses both the Victoria and Rocky Point localities; that on the QCI encompass both the Queen Charlotte City and Skidegate sites.

The Alaska specimens were deeply buried among pieces of Sitka Spruce (*Picea sitchensis*) bark and wood in wet moss and soil in an area about the size of a desktop, 120 cm (4 ft) long and 60 cm (2 ft) wide, beside a trail in rainforest of the Tongass National Forest. The fastest chordeumatidans that RMS has encountered, they raced out of the litter and soil when disturbed and had to be grabbed

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quickly to avoid being lost. A thorough search revealed no more individuals as did ones of identical spots directly across the path and 30 m (10 ft) along it in both directions. *Opiona columbiana* is thus highly localized, and its discovery was fortuitous because that particular spot did not stand out over the hundreds of similar ones in the general area. This situation exemplifies the difficulty in sampling diplopods in Alaskan rainforests, for aside from the ubiquitous representatives of the Parajulidae (order Julida) and the diverse faunas on the southernmost islands (Revillagigedo, Annette, Prince of Wales, and Dall, etc. (Shelley 1990)), millipeds are scattered and can be virtually anywhere; consequently, encounters are primarily chance events. The new samples from Washington were discovered in "Oregon White Oak (*Quercus garryana*) leaf litter," "on soil under a rock," and in a "compost pile and garden," all typical milliped habitats.

These new localities of *O. columbiana* are recorded below along with ones from Vancouver Island and the Puget Sound region of Washington; the distribution is depicted in Figure 1. Repository acronyms are NCSM, North Carolina State Museum of Natural Sciences, Raleigh, USA; RBCM, Royal British Columbia Museum, Victoria, Canada; UAB, Department of Biological Sciences, University of Alberta, Edmonton, Canada; and VMNH, Virginia Museum of Natural History, Martinsville, USA.

USA: Alaska: *Wrangell-Petersburg Borough*, Wrangell I., Tongass Nat. For. ca. 19.2 km (12 mi) SE Wrangell, Earl West Cove camping area (56°20'59.2" N, 132°07'59.4" W; near sea level), ♂, 2♀, 26 August 2006, R. M. Shelley (NCSM). Washington: *Skamania Co.*, 5.6 km (3.5 mi) N, 13.6 km (8.5 mi) E Washougal, McCloskey Cr. at Maybee Mines Rd. (45°37.76' N, 122°8.44' W; 304.9 m (1,000 ft) elev.), 2♂, 4♀, 30 November 2003, C. Richart (VMNH); and 4.8 km (3 mi) W White Salmon, near Spring Cr. Fish Hatchery on WA highway 14 (45°43.680' N, 121°32.67' W; 122 m (400 ft) elev.), 7♂, 3♀, 30 November 2003, W. P. Leonard (VMNH). *Spokane Co.*, Spokane, Riverside State Park, "Bowl & Pitcher" rock formation beside Spokane R. (47°42.048' N, 117°28.08' W; 518.3 m (1,700 ft) elev.), ♂, 7 November 2004, W. P. Leonard (VMNH). *Thurston Co.*, Olympia, 232 Foote St. (47°2.80' N, 122°54.95' W; 61 m (200 ft) elev.), 2♂, 3♀, juvs., 1-7 April 2005, W. P. Leonard (VMNH).

CANADA: British Columbia: *St. Elias Mts.*, northeast corner of confluence of Tatshenshini and O'Connor Rivers (59°39' N, 137°10' W), 2♀, 27 July 1992, C. S. Guppy (RBCM). *Queen Charlotte Islands*: *Graham I.*, Queen Charlotte City, ♀, 23 August 1974, J. Belicek (UAB); and Spirit Lake nr. Skidegate (53°26'35.4" N, 131°99'86.0" W), ♀, 21 September 2004, K. Ovaska, L. Sopuck (VMNH). *Vancouver I.*: Tofino, Chesterman's Beach, ♀, 15-18 August 1966, G. C. Carl (RBCM); Horne Lake Caves Provincial Park, 5♂, 7♀, juv., 10 August 1985, D. P. Shaw (NCSM); and Rocky Point, ♀, 22 October 2004, K. Ovaska (VMNH). *Gulf Islands National Park Reserve*: North Pender I., Roe Lake, 2♂, 10 May 2004, K. Ovaska (VMNH).

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